

ABSTRACT OF THE DISCLOSURE

A soil and groundwater decontamination system (10) and associated process are provided for soil and groundwater remediation. The system (10) and process utilizes both a physical or chemical reaction with the contaminants in a contaminated subsurface zone and extraction of the reaction end products and any remaining contaminants from the contaminated subsurface zone (100). In architecture, the soil and groundwater decontamination system (10) comprises an chemical product (12) that is introduced into an injection well (18). The injection well (18) is disposed into a passage provided in or adjacent to the contaminated subsurface zone (100) and allows the introduction of the chemical product (12) (and catalyst (24) if necessary) into the contaminated subsurface zone (100). The chemical product (12) reacts (physically or chemically) with contamination in the soil and groundwater and creates a reaction end product. The soil and groundwater decontamination system (10) further includes a vacuum pump (15) in fluid connection with a drop tube (22), and an optional air supply (16) in fluid communication with a well casing (18). The drop tube (22) includes an opening and is disposed longitudinally inside the well casing (20). The reaction end products and remaining contaminants are drawn into an opening in the well casing (20) and into the opening disposed in the drop tube (22), thereby extracting the reaction end products and remaining contaminants from the soil and groundwater in a preferably integrated dual-phase flow of vapor phase and liquid phase in one common stream.

